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PATENT
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Docket No. 9116-739

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Rosemary Fields

Rosemary Fields

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Applicant: Robert H. Rohrbaugh et al.

Serial No.: 10/020,064

Group Art Unit: 1755

Filed: 12/13/01

Examiner: David M.
Brunsman

For: Coating for Modifying Hard Surfaces and Processes for Applying the Same

TRANSMITTAL OF APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

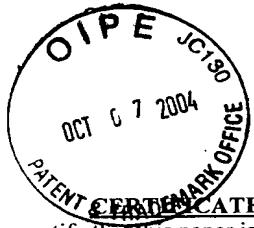
Dear Sir:

Submitted herewith in triplicate is an Appeal Brief in support of the Notice of Appeal filed July 28, 2004. Please charge the amount of \$330.00 for payment of the government fee for filing the present Appeal Brief to our Visa credit card account. Form PTO-2038 is attached. Please charge any additional fees required or credit any excess in fees paid in connection with the present communication to Deposit Account No. 04-1133.

Respectfully submitted,

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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Appellant: Robert H. Rohrbaugh et al. Paper No.:

Serial No.: 10/020,064 Group Art Unit: 1755

Filed: November 6, 2001 Examiner: David M. Brunsman

For: **Coating for Modifying Hard Surfaces and Processes for Applying the Same**

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The present Appeal Brief is submitted in support of the Notice of Appeal filed by certificate of mailing on July 28, 2004.

I. REAL PARTY IN INTEREST

The real party in interest is the assignee of the present application, Procter & Gamble Company.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to the Appellant, the Appellant's undersigned legal representative or the assignee which will directly effect or be directly effected by or having a bearing on the Board's decision in the present appeal.

III. STATUS OF THE CLAIMS

Claims 1-12, 24 and 25 are currently pending and in the present application. Claims 1-12, 24 and 25 stand rejected and are the subject of the present appeal. A complete copy of the pending claims 1-12, 24 and 24 on appeal is set forth in the Appendix.

IV. STATUS OF AMENDMENT FILED SUBSEQUENT TO REJECTION ON APPEAL

Appellants have appealed the Examiner's final rejection of the claims set forth in the Official Action dated April 30, 2004. A Response Under 37 C.F.R. 1.116, without claim amendments, was submitted by Certificate of Mail on July 28, 2004. An Advisory Action was mailed on August 16, 2004 indicating that the Examiner had considered the July 28 response and found it unpersuasive.

V. SUMMARY OF THE INVENTION

The present invention is directed to hard surface coating films which provide particular benefits to the coated hard surfaces. The benefits provided may be durable, long-lasting or semi-permanent and may include improved surface wetting and sheeting, quick drying, uniform drying, soil removal, self-cleaning, anti-spotting, anti-soil deposition, cleaner appearance, enhanced gloss and color, minor surface defect repair, reduced damage to abrasion and improved transparency (see specification at page 2, lines 24-32).

According to independent claim 1, the surface coating film is for at least partially covering a surface. The coating film is comprised of a plurality of nonphotoactive nanoparticles which are present in an amount less than 3 $\mu\text{g}/\text{cm}^2$ of the area of the surface.

Claims 2-12 further define the film of claim 1. According to claim 2, at least some of the nanoparticles comprise a synthetic mineral. In claims 3, 4 and 5, at least some of the

nanoparticles comprise smectite, hectorite or fluorohectorite, respectively. According to claim 6 the film may optionally contain a non-functional level of binder material, and in an aspect according to claim 7 the film contains less than 3% peptizer. In a further aspect defined by claim 8, the film consists essentially of nanoparticles, a wetting agent, and water. Claim 9 is directed to an aspect wherein the film is substantially continuous and in the aspect defined by claim 10 the film is transparent. Claim 11 recites the film having an exposed first surface and a second surface adjacent the surface to which it is applied, wherein the first surface is hydrophilic. Claim 12 is directed to an aspect wherein the film is less than 300 nanometers thick.

Independent claim 24 is also directed to a surface coating film for at least partially covering a surface. The coating film comprises a plurality of nonphotoactive nanoparticles and water, and the film has a water content of less than or equal to about 4%.

Dependent claim 25 further defines the film of claim 24 as being less than 300 nanometers thick.

VI. ISSUES ON APPEAL

There are two issues on appeal for review by the Board, as follows:

A. The rejection of claims 1-7, 9-12, 24 and 25 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,989,696 to McCarthy et al.

B. The rejection of claim 8 (depending from claim 1) under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,9898,696 to McCarthy et al.

VII. GROUPING OF THE CLAIMS

A. With respect to the above noted issue A on appeal, Appellant concedes that claims 1-7, 9-10 and 12 stand or fall together. However, Appellant submits that claim 11 is independently patentable from claim 1 from which it directly depends. In addition, claims 24 and 25 are independently patentable. Reasons in support of the independent patentability of these claims are set forth below.

B. With respect to the above noted issue B on appeal, Appellant submits that claim 8 is independently patentable from claim 1 from which it depends.

VIII. ARGUMENTS

As will be set forth in detail below, the coatings as defined by claims 1-12, 24 and 25 are novel over and patentably distinguishable from U.S. Patent No. 5,989,696 to McCarthy et al. The coatings defined by claims 1 and 8 are nonobvious over and patentably distinguishable from U.S. Patent No. 5,989,696 to McCarthy et al. Accordingly, the rejections of claims 1-7, 9-12, 24 and 25 under 35 U.S.C. § 102(b) and the rejection of claim 8 (which depends from claim 1) under 35 U.S.C. § 103(a) should be reversed. Favorable action by the Board is respectfully requested.

A. The Claimed Coating Films Are Not Anticipated by McCarthy

The compositions as defined by claims 1-7, 9-12, 24 and 25 are not anticipated by and are patentably distinguishable from McCarthy.

1. The Invention

Independent claim 1 is directed to a surface coating film for at least partially covering a surface. The coating film is comprised of a plurality of nonphotoactive nanoparticles which

are present in an amount less than 3 $\mu\text{g}/\text{cm}^2$ of the area of the surface. Claims 2-7, 9 and 10 depend from claim 1 and recite the surface coating film: wherein at least some of said nanoparticles comprise a synthetic mineral (claim 2); wherein at least some of the nanoparticles comprise smectite (claim 3); wherein at least some of the nanoparticles comprise hectorite (claim 4); wherein at least some of the nanoparticles comprise fluorohectorite (claim 5); optionally containing a non-functional level of binder material (claim 6); containing less than 3% peptizer (claim 7); which is substantially continuous (claim 9); and which is transparent.

Dependent claim 11 is directed to the film of claim 1 having an exposed first surface and a second surface adjacent the surface to which it is applied, wherein the first surface of the film is hydrophilic. Dependent claim 12 is directed to the film of claim 1 which is less than 300 nanometers thick.

Independent claim 24 is directed to a surface coating film embodiment for at least partially covering a surface. The film comprises a plurality of nonphotoactive nanoparticles and water, and the film has a water content of less than or equal to about 4%. Claim 25 recites the surface coating film of claim 24 which is less than 300 nanometers thick.

2. The Examiner's Position

In rejecting claims 1-7, 9-12, and 24-25 under 35 U.S.C. § 102(b) as being anticipated by McCarthy, the Examiner asserted that Example 8 of the reference discloses a film comprising fluorohectorite on a polymeric substrate in "an amount of 0.3 lb per 13000 ft²." (see April 30, 2004 Office Action, page 2) The Examiner notes that upon application of the proper conversion factors, this is equivalent to a coating weight of 11.25 micrograms/cm². Further, on page 2 of the April 30, 2004 Office Action, the Examiner asserted that McCarthy teaches that the deposited film of example 8 "is dried and not disclosed as having a residual

water content." The Examiner further noted that McCarthy teaches that the fluorohectite of Example 8 "comprises only 16.2% of the coating composition," and calculated therefore that the fluorohectite particles are only present in an amount of 1.8 mcg/cm² (16.2% of 11.25). The Examiner thereby concludes that Example 8 anticipates instant claim 1.

In response to Appellants argument that the Examiner was misconstruing the disclosure of "0.3 lb per 13000 ft²" (column 3, lines 17-20, e.g.) as a wet coating weight measurement when the specification appears to indicate that this number reflects a dry coating weight measurement, was dismissed by the Examiner in an Advisory Action dated August 16, 2004 wherein he asserted that the Appellants have provided no evidence that the McCarthy coating weights are measured after drying. Further, the Examiner submitted two references which he maintains demonstrate that the industry standard for measuring coatings applied by "Meyer drawdown rods," as specified in the McCarthy disclosure as the method employed in Example 8, is as initially applied, prior to drying.

With respect to claim 11, the Examiner merely asserts that this property would be expected to be exhibited by the McCarthy products because "similar materials are used to form the films of each," and with respect to claim 12 the Examiner asserts that the allegedly "small amount of material per unit area would be expected to exhibit a film thickness less than 300nm."

With respect to independent claim 24 and claim 25 dependent therefrom, the Examiner asserted that McCarthy discloses that the "deposited film is dried (see column 4, line 6) and not disclosed as having any residual water content." In response to Appellants assertions that McCarthy fails to explicitly disclose any films having a water content less than 4%, and that "less than 4%" may not necessarily be considered "dry" by industry standards, the Examiner replied that since the term "dried" is not specifically defined in the context of

the reference, its plain meaning should be inferred as the intended meaning, and the Examiner asserts that the plain meaning of "dry" is "having no moisture." Over the course of prosecution the Examiner dismissed various examples of industry standards submitted by the Appellants which demonstrate that the term "dry" in the coating industry is a relative term and does not necessarily, and indeed most often, does not mean to a point of dehydration, on the basis that they were not authoritative because they derived from either the paint industry or a foreign industry (see April 30, 2004 Office Action at page 2, bridging to page 3). As to claim 25 the Examiner again asserted that the allegedly similarly "small amount of material per unit area would be expected to exhibit a film thickness less than 300nm."

3. **The Claimed Coating Films Are Not Anticipated by McCarthy**

However, the McCarthy disclosure related to coating weights is fatally flawed with respect to its suitability as a prior art reference. First, as previously asserted, the methods of coating disclosed in the McCarthy specification are said to "yield" coating weights of a stated range. There is nothing in the disclosure to resolve the ambiguity of whether the coating weights are calculated as wet or dry weights. McCarthy does not define the inventive coatings by coating weights and coating weight limitations are not found in the claim language. Hence, while the ambiguity may not have been fatal to patentability of the McCarthy invention, it is fatal to its application as a reference against the claim language of the present invention.

Second, there is an even more significant error in McCarthy that makes it impossible to determine the coating weights disclosed in McCarthy Example 8. The Examiner failed to note that the full quotation of the reference coating weight range is actually stated as "between 0.3 and 0.6 lbs.13,000 [sic] sq .ft. ream." These are the numbers upon which the Examiner based his conversions and determined alleged anticipation of the instantly recited

range of less than $3\mu\text{g}/\text{cm}^2$. However, upon further review of references in the art, it is clear that these numbers would be nonsensical to a person of ordinary skill in the coating arts. It is common knowledge in the art that a standard "ream" is **3,000** sq. ft., and coating weights are typically reported as "pounds per 3,000 sq. ft. ream." In fact, elsewhere in the McCarthy disclosure the coating weight units are used properly and typically. See: column 3, lines 60-61 ("from about 10 to 500 lbs/3,000 sq. ft. ream"); Example 6, column 19, line 41 ("1.4 lbs/3,000 sq. ft. ream"); Example 3, column 16, line 25 ("0.7 lbs/3,000 sq. ft. ream"); Example 7, column 20, lines 51-52 (1.0 lbs/3,000 sq. ft. ream); and Example 10, column 26, lines 37-38 ("from 5 to 30 pounds per 3,000 sq. ft. ream").

When one looks carefully at the phrasing of the questionable disclosure, the source of error is immediately apparent as it is clear that the author intended the phrase to read "between 0.3 and 0.6 lbs./**3,000** sq. ft. ream." One arrives at the corrected phrase merely by replacing the "1" with the "/" (backslash). This removes the "1" which forms the incorrect ream measurement of "13,000" and substitutes the backslash as the "per" symbol which is necessary to make the phrase grammatical.

Applicants concede that it is theoretically possible to define a ream as having 13,000 sq.ft. of substrate. A "ream" is technically 500 sheets of paper and one may theoretically manipulate paper size such that 500 sheets represents any area. However, this would be extraordinarily atypical and would not permit standardization, comparison, or utilization of industrial tools or equipment. As an example of what defines the industry standard, as well as to buttress Appellants contention that a 3,000 sq. ft. ream is the commonly known standard in the coating arts and is used exclusively to report coating weights in the English system, Appellants submit a copy of the IML Industry Standards Group test method for determining applied adhesive coating weights wherein coating weight is defined as "the amount of

adhesive that has been applied to the substrate...results are stated in pounds per ream or grams per square meter, with a ream being 3000 square feet or 278.7 square meters."

In addition, without either the word "per" or the backslash symbol for "per," the phrase is grammatically incorrect and does not make sense. It is very significant that McCarthy employed both the proper standard for "ream" and proper phraseology in every other use of the term in the disclosure, other than when referring to this particular range. Tellingly, a USPTO keyword search for "ream" and "coating" yields over 1600 issued patents. All the patents which utilize "ream" to define coating weights employing the English system of units use 3,000 square foot reams and define the coating weight as pounds *per* ream. Only a single issued patent, the McCarthy reference, mentions a 13,000 square foot ream and uses the construction of pound-reams. Clearly this is a clear error in the McCarthy specification and as such, the disclosed erroneous numbers cannot validly be used to assert anticipation of the present claims. What McCarthy clearly intended to disclose were coatings having coating weights in the range of 0.3 to 0.6 lbs./3,000 sq. ft. ream, the lower end of which converts to $[(.3\text{lb./3,000 ft}^2)(454\text{g/lb})(1,000,000\mu\text{g/g})(\text{ft}^2/(30.48\text{cm})^2)] = 48.9\mu\text{g per cm}^2$, well outside the instantly claimed coating weight limitation of less than $3\mu\text{g per cm}^2$.

Even if the one assumes, arguendo, that the Examiner is correct in his assertion that the McCarthy numbers reflect wet coating weight, and that one must therefore consider that fluorehectite comprises only 16.2% of the wet coating composition such that the actual weight of the applied hectorite itself is $(48.9\mu\text{g per cm}^2)(.162) = 7.9\mu\text{g per cm}^2$, the value is still outside the range instantly claimed and McCarthy therefore fails to anticipate the instant claims.

The second ambiguity in the McCarthy reference has to do with the disclosed coating weights and whether the numbers provided reflect measurement of a wet or dry coating

weight. The only evidence the Examiner submits to support his view that the McCarthy coating weights are "wet" are references which refer to the measurement of coating weights upon application, before drying, when using the Meyer drawdown rod method of application. Appellants respectfully maintain that the Examiner's proffered "evidence" of typical industry measurement is not on point. Appellants concede that Meyer rods (also known as Meyer bars) are a very simple, post metering conventional wet-coating application means. According to the Examiner's references, excess coating composition is applied by a roller from a tray and then metered by drawing wire-coated rods down the excess-coated substrate wherein the characteristics of the wire wound about the rod determine the wet coating *thickness*. Given the applied thickness and the percent solids in the coating composition, either wet coating weights or dry coating weights are readily calculable. Neither is yielded directly. Hence, this does not resolve the present ambiguity *per se*. It does not tell us which calculation McCarthy used to "yield" the disclosed coating weight range.

A person of ordinary skill in the art could report either the wet or dry weight, depending on whether the "use" of interest was influenced by wet coating weight, or the amount of some ingredient or substituent of the coating film after curing or drying. It is important to keep in mind that wet coating weight may be calculated simply from the thickness applied (determined by the rod meter) and the specific gravity of the coating composition, while dry coating weight requires knowledge of the percent solids in the composition. However, McCarthy, which relates to antistatic coatings, is interested specifically in the coating characteristics of charge dissipation and static decay times. These are characteristics influenced by the percent solids in the coating composition and are relevant characteristics only of the cured and/or dried coating. Hence the dry coating weight would be of far more consequence to the characteristics of interest to McCarthy. Appellants submit, therefore, that McCarthy resolves the ambiguity impliedly, as only the dry coating

weight would be germane to the properties of the coatings disclosed as being desirable in McCarthy.

Anticipation under 35 U.S.C. § 102(b) requires the disclosure in a single prior art reference of each element of the claims under consideration, *Alco Standard Corp. v. TVA*, 1 U.S.P.Q.2d 1337, 1341 (Fed. Cir. 1986). The corollary of the rule is that absence from the reference of any claimed element negates anticipation. *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed.Cir. 1986). Since McCarthy fails to disclose surface coating films comprised of a plurality of nanoparticles present in an amount less than 3 µg/cm² of the area of the surface, it cannot anticipate independent claim 1 or claims 2-12 dependent therefrom. The rejection should therefore be reversed.

5. McCarthy Fails to Anticipate the Surface Coating Film of Claim 24

The surface coating film of Independent claim 24, as discussed above, comprises a plurality of nonphotoactive nanoparticles and water and the film has a water content of less than or equal to about 4%.

The Examiner asserts that McCarthy discloses that the "deposited film is dried (see column 4, line 6) and not disclosed as having any residual water content" (see Office Action April 30, 2004, page 2, paragraph 4). In response to Appellants assertions that McCarthy fails to explicitly disclose any films having a water content less than 4%, and that "dry" is applied to coatings having greater than 4% water by industry standards, the Examiner replied that since the term "dried" is not specifically defined in the context of the reference, its plain meaning should be inferred as the intended meaning, and the Examiner asserts that the plain meaning of "dry" is "having no moisture." Over the course of prosecution the Examiner dismissed various examples of industry standards submitted by the Appellants which demonstrate that the term "dry" in the coating industry is a relative term and does not

necessarily, and most often, does not mean to a point of dehydration, on the basis that they were not authoritative because they derived from either the paint industry or a foreign industry (see April 30, 2004 Office Action at page 2, bridging to page 3). As to claim 25 the Examiner again asserts that the allegedly "small amount of material per unit area would be expected to exhibit a film thickness less than 300nm."

Throughout the prosecution the Examiner has maintained that the coatings of McCarthy are disclosed as being "dried" and are therefore free of "*any* residual water" (see Dec. 1, 2003 Office Action at page 3, paragraph 2) and have "*no* moisture" (see August 16, 2004 Office Action at page 2, paragraph 3, April 30, 2004 Office Action at page 2, paragraph 4)(emphases added). And, throughout the prosecution Appellants have countered with references from the coating industry which use the term "dry" or "dried" to mean other than completely free from water. For purposes of reiterating the meaning of "dry" as defined in the coating arts, Appellants submit a publication by ITW Resin Technologies, Bulletin No. 314, "Glossary of Coating Terms." The purpose of this submission is simply to demonstrate once again that the technical definition of the term "dry" is not the same in the coating arts as it is defined in a general usage dictionary. "Dry" is not an absolute condition, but is measured relative to some empirical standard. The Examiner ignores that the Federal Circuit has made it clear that meanings ascribed by technical artisans trump general usage meanings for purposes of defining a term in that art.

With respect to interpreting claim language, the Federal Circuit holds "[c]laims are to be construed from the vantage point of a person skilled in the relevant art. To the extent that this artisan would understand a claim term to have the same meaning in the art as that term has in common, lay usage, a general-usage dictionary can be a helpful aid to claim construction. But where evidence — such as expert testimony credited by the factfinder, or

technical dictionaries — demonstrates that artisans would attach a special meaning to a claim term, or, as here, would attach no meaning at all to that claim term (independent of the specification), general-usage dictionaries are rendered irrelevant with respect to that term; a general-usage dictionary cannot overcome credible art-specific evidence of the meaning or lack of meaning of a claim term." *Vanderlande Industries Nederland BV v. International Trade Commission*, 70 USPQ2d 1696 (Fed. Cir. 2004); Cf. *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1478 45 USPQ2d 1429 (Fed. Cir. 1998).

Hence, Appellants maintain that the Examiner is incorrectly allowing a general usage definition to govern the meaning of a technically employed term. Since McCarthy fails to disclose either explicitly or inherently any coating composition having less than or equal to 4% water, it necessarily fails to anticipate instant claim 24 which requires this element.

In addition, Appellants note that claim 24 is directed to surface coating films which comprise nanoparticles *and* water, with the film having a water content of less than or equal to about 4%. In other words, water is a required ingredient, albeit in an amount of less than or equal to 4%. The Examiner has argued incessantly and unwaveringly that the compositions of McCarthy are literally "dry." The Examiner has insisted that they are free of "any residual water" (see Dec. 1, 2003 Office Action at page 3, paragraph 2) and have "no moisture" (see August 16, 2004 Office Action at page 2, paragraph 3, April 30, 2004 Office Action at page 2, paragraph 4). Claim 24, however, has two required elements with respect to water. If the Examiner is correct in his assertion that the McCarthy coatings are literally "dry," then McCarthy cannot anticipate claim 24 because the McCarthy coatings would therefore not comprise the requisite element of water.

Anticipation under 35 U.S.C. § 102(b) requires the disclosure in a single prior art reference of each element of the claims under consideration, *Alco Standard Corp.* 1

U.S.P.Q.2d at 1341. The corollary of the rule is that absence from the reference of any claimed element negates anticipation. *Kloster Speedsteel AB*, 230 USPQ at 81. Since McCarthy fails to teach coating films comprising water in an amount less than or equal to 4%, it does not anticipate the present surface coating films. The rejection should therefore be reversed.

6. The Surface Coating Film of Claim 25 Is Independently Patentable

Claim 25 recites the surface coating film of independent claim 24 which is less than 300 nanometers thick. The Examiner relies on the disclosure of coating weights which reflect a printing error as fully explicated in section VIIIA(2), *supra*, to assert that coatings having similarly low coating weights and low concentrations of nanoparticles would be expected to exhibit similar levels of thickness. However, Appellants submit that the revelation of the unit error negates this line of reasoning as the coatings of McCarthy and the presently recited coatings do NOT have similar coating weights or nanoparticle concentrations. McCarthy fails to explicitly disclose any coatings with thicknesses less than 300 nanometers. Hence, instant claim 25 is not anticipated by McCarthy under 35 U.S.C. § 102(b) regardless of the Board's determination with respect to instant independent claim 24 and is thereby independently patentable. The rejection should be reversed.

B. The Claimed Coating Films Are Nonobvious Over McCarthy

The coating film as defined by claim 8, including the limitations of the claim 1 from which it depends, is nonobvious over and patentably distinguishable from McCarthy.

1. The Invention

As a dependent claim, the aspect of the invention defined by claim 8 includes the limitations of independent claim 1. Therefore, claim 8 is directed to a surface coating film

for at least partially covering a surface, the coating film comprised of a plurality of nonphotoactive nanoparticles which are present in an amount less than 3 $\mu\text{g}/\text{cm}^2$ of the area of the surface, further narrowed by claim 8 such that the surface coating films consist essentially of nanoparticles, a wetting agent and water.

2. The Examiner's Position

The Examiner rejected Claim 8 as being obvious and unpatentable over McCarthy in view of the American Heritage Dictionary entry for "wetting agent." Specifically, the Examiner asserts that the addition of a wetting agent to a film forming composition like that of the prior art would have been obvious to one of ordinary skill in the art because the definition of "wetting agent" teaches that it will cause a liquid to spread across and penetrate a surface more easily.

3. The Claimed Coating Films Are Nonobvious Over McCarthy

First, Appellants submit that claim 8 is nonobvious as depending from a nonobvious independent claim. Claim 1, as fully discussed above, recites, *inter alia*, surface coating films comprising nanoparticles present in an amount less than 3 $\mu\text{g}/\text{cm}^2$ of the area of the surface. As discussed above, McCarthy fails to disclose surface coating films comprising this coating weight limitation. Nor does McCarthy suggest such surface coating films. Aside from the Examiners assertions of anticipation with respect to this limitation, which have been shown, *supra* (section VIIIA(2)) to be based on a clear error in the reference, there have been no other assertions as to suggestions or teachings in McCarthy that would motivate the contemplation of a surface coating film having the coating weights instantly claimed. McCarthy relates to antistatic coatings, and coating weights and/or nanoparticle coating weights, *per se*, are not taught as relevant to the desirable static properties exhibited by the

McCarthy coatings. As depending from a nonobvious independent claim, claim 8 is therefore also nonobvious. The rejection should therefore be reversed.

4. The Surface Coating Film of Claim 8 is Independently Patentable

Regardless, claim 8 is independently patentable over claim 1 over McCarthy. The Examiner submits the American Heritage Dictionary as the defining authority for "wetting agent" and submits that because a wetting agent is therein defined as an agent that "will cause a liquid to spread across and penetrate a surface more easily," its inclusion in the present surface coating films is obvious. However, the Examiner fails to point to any motivation in McCarthy for enhancing spreadability (flow) or penetration of the substrate.

No Prima Facie Case of Obviousness is Established

Appellants find no teaching, suggestion or reference in McCarthy of surface coating films comprising wetting agents. In fact, Appellants find no reference in McCarthy to the desirability of coating compositions which spread more easily across the substrate and find no teaching or suggestion in McCarthy that enhanced penetration of the substrate is desirable. There is nothing inherent in the purpose of McCarthy, i.e. to provide antistatic coatings to substrates, that would lead an ordinary practitioner of the art seeking to create antistatic coatings to add an agent that causes easier spreading and/or enhanced penetration.

McCarthy discloses several characteristics of coating films which relate to the desirable antistatic properties, but Appellants fail to find spreading ease or penetration of the substrate among them. In fact, a majority of the McCarthy substrates are paper products and Appellants conceive that "wetting agents" may actually be inimical to the use of such highly porous absorbent substrates. In fact, McCarthy specifically teaches away from enhanced penetration in column 5, lines 43-44 wherein the desirability of starch additives to the paper

substrates is discussed in order to "improve the resistance of the paper to penetration by aqueous liquids." As the McCarthy coating compositions are applied as aqueous dispersions, (see column 6, lines 12-13), it appears that McCarthy is teaching away from enhanced penetration of the disclosed applied coating composition. McCarthy, at column 6, lists several optional additives including starch, binders and pigments, but fails to list wetting agents. In addition, it is clear from this disclosure that McCarthy uses manipulations of the ratio of starch and water to control viscosity and "flow," rather than wetting agents (lines 33-36).

To establish *prima facie* obviousness of the claimed invention, all the claim limitations must be taught or suggested by the prior art, *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). Furthermore, "[i]t is error to find obviousness where references diverge from and teach away from the invention at hand." *In re Fine*, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988) "A reference may be said to teach away when a person of ordinary skill, upon reading it, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path taken by the inventor." *Monarch Knitting Mach. Corp. v. Sulzer Morat Gmbh*, 139 F.3d 877, 45 (Fed. Cir. 1995). McCarthy fails to teach coating compositions comprising a wetting agent. McCarthy specifically teaches against the properties cited by the Examiner as being enhanced by addition of a wetting agent. Hence, claim 8 is nonobvious over McCarthy and the rejection should therefore be reversed. The rejection should therefore be reversed.

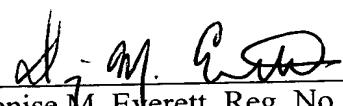
V. CONCLUSIONS

For the reasons set forth in detail above, the surface coating films defined by the claims 1-7, 9-12, 24 and 25 are not anticipated by and are patentably distinguishable from McCarthy. The surface coating films defined by claim 8 and claim 1 from which it depends are nonobvious over and patentably distinguishable from McCarthy in view of the American

Heritage Dictionary. Accordingly, the rejections of claims 1-12, 24 and 25 under 35 U.S.C. §102 and/or 103 should be reversed. Favorable action by the Board is respectfully requested.

Respectfully submitted,

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APPENDIX

Claims on Appeal:

Claim 1 (original): A surface coating film for at least partially covering a surface, said coating film comprised of a plurality of nonphotoactive nanoparticles which are present in an amount less than 3 $\mu\text{g}/\text{cm}^2$ of the area of the surface.

Claim 2 (original): The film of Claim 1 wherein at least some of said nanoparticles comprise a synthetic mineral.

Claim 3 (original): The film of Claim 1 wherein at least some of said nanoparticles comprise smectite.

Claim 4 (original): The film of Claim 1 wherein at least some of said nanoparticles comprise hectorite.

Claim 5 (original): The film of Claim 1 wherein at least some of said nanoparticles comprise fluorohectorite.

Claim 6 (original): The film of Claim 1 optionally containing a non-functional level of binder material.

Claim 7 (original): The film of Claim 1 containing less than 3% peptizer.

Claim 8 (original): The film of Claim 1 consisting essentially of nanoparticles, a wetting agent, and water.

Claim 9 (original): The film of Claim 1 which is substantially continuous.

Claim 10 (original): The film of Claim 1 which is transparent.

Claim 11 (original): The film of Claim 1 having an exposed first surface and a second surface adjacent the surface to which it is applied, wherein said first surface of said film is hydrophilic.

Claim 12 (original): The film of Claim 1 which is less than 300 nanometers thick.

Claims 13-23 (cancelled)

Claim 24 (original): A surface coating film for at least partially covering a surface, said coating film comprised of a plurality of nonphotoactive nanoparticles and water, said film having a water content of less than or equal to about 4%.

Claim 25 (original): The film of Claim 24 which is less than 300 nanometers thick.

Abrasion Resistance	The ability of a coating to resist degradation due to mechanical wear.
Abrasive Media	The material used in abrasive blasting to remove surface contaminants. Examples of abrasive media are sand, iron shot, crushed iron slag, glass beads, or ground nutshells.
Accelerator	A substance used in small proportions to increase the speed of a chemical reaction. Accelerators are often used in the coating industry to hasten the curing of a coating system.
Acrylic Resin	A clear resin attained by polymerizing various acrylic monomers either alone or in combination.
Acrylic Latex	An aqueous dispersion of acrylic resins.
Activator	The curing agent of a two component coating system.
Adhesion	The degree of attachment between a coating film and the underlying material to which it is in contact.
Adsorption	Process of attraction or attachment to a surface. The retention of foreign molecules on the surface of a substance.
Aggregate	The stone matrix in concrete.
Air Cap (Air Nozzle)	Perforated housing for directing the atomizing air at the head of a spray gun.
Air Drying	The most common form of curing a coating in which drying takes place by oxidation or solvent evaporation by simple exposure to air without heat or catalyst.
Air Entrapment	The inclusion of air bubbles in the liquid or coating film.
Airless Spray	A spraying system in which coating is atomized using high hydraulic pressure rather than compressed air.
Alcohols	A group of solvents of relatively high evaporation rate but with fairly low solvent strength. Methanol, ethanol, and isopropyl alcohol are common alcohols.
Aliphatic Hydrocarbons	A class of organic solvents which are composed of open chains of carbon atoms. Aliphatics are relatively weak solvents. Mineral spirits and VM & P Naphtha are aliphatic solvents.
Aliphatic Coatings	Two component products that are ultraviolet resistant. They will not discolor in sunlight.
Alkali	An aqueous liquid which has a pH value of between 7 & 14. A base or caustic material.
Alkyd Resin	Resins prepared by reacting alcohols and fatty acids. Widely used in general purpose coatings.
Alligatoring	Surface imperfections of a coating film having the wrinkled appearance of alligator skin.
Ambient Temperature	Room temperature or the existing temperature of the surroundings.
Amine	Materials often used as curing agents for epoxy coatings

Bulletin #314

Anchor Pattern	The surface profile generated by abrasive blasting. The difference between peaks and valleys of the blast profile.
Anode	The positive terminal of an electric source. In a corrosion cell, the anode is the electrode that has the greater tendency to go into solution or the point at which corrosion occurs.
Aromatic Hydrocarbons	A class of relatively strong organic solvents which contain an unsaturated ring of carbon atoms. Examples are benzene, toluene, and xylene.
Asphalt	Black resinous material of petroleum origin.
Barrier Coat	A coating used to isolate a coating system either from the surface to which is applied or a previous coating for the purpose of increasing adhesion or insuring compatibility.
Binder	The non-volatile portion of the vehicle of a coating which holds together the pigment particles.
Bituminous Coating	A coal tar or asphalt based coating material usually used in thick films.
Blast Cleaning	The cleaning and roughing of a surface by the use of sand, artificial grit, or fine metal shot which is projected at a surface by compressed air or mechanical means.
Blast Profile	Same as anchor pattern. A cross sectional view of an abrasive blasted surface.
Bleaching	The fading of a color toward white generally caused by exposure to chemicals or ultraviolet radiation.
Bleeding	The diffusion of color matter through a coating from underlying surfaces causing a color change.
Blistering	The formation of blisters in coating by the local loss of adhesion and lifting of the film from the underlying substrate.
Blooming	A haziness which develops on coating surfaces caused by the exudation of a component of the coating.
Blushing	A film defect which manifests itself as a milky appearance which is generally caused by rapid solvent evaporation or the presence of excessive moisture during the curing process.
Bonding	The attachment between a coating film and the underlying material to which it is applied.
Bounce Back	The rebound of atomized coating, especially when applied by conventional air spray methods.
Boxing	Mixing of coatings by pouring from one container to another.
Bridging	The formation of a coating film over a depression.
Brittleness	The lack of resistance to cracking or breaking of a coating when bent or flexed.
Broom Finish	The finishing step on concrete that is broomed to give a rough texture.
Bubbling	A temporary or permanent film defect in which bubbles of air or solvent vapor are present in the applied film.
Build	The wet or dry film thickness of a coating.
Catalyst	An accelerator, activator, or curing agent which chemically increases the rate of reaction in a coating.
Cathode	The negative terminal of an electrolytic cell which, in the corrosion process, is protected and not attacked.
Cathode Protection	The reduction or prevention of corrosion of a metal surface caused by making it cathodic. This is accomplished by using a sacrificial anode (such as in zinc rich coatings or galvanizing) or by using impressed current.
Caustic	A strong base or alkaline material.
Caustic Soda	A common name for sodium hydroxide, a strong base or alkali.
Cellusolve*	Proprietary name for ethylene glycol monoethyl ether. A slow evaporating, water miscible, relatively strong solvent often used in epoxy coatings.

Cementitious Coatings	A coating containing Portland cement as one of its components held on the surface by a binder.
Centipoise	One hundredth of a poise which is a unit of measurement for viscosity. Water at room temperature has a viscosity of 1.0 centipoise. Most thin film coatings range from 50-100 centipoise.
Chalking	The formation of a friable powdery coating on the surface of a paint film generally caused by exposure to ultraviolet radiation, resulting in a loss of gloss.
Checking	Cracks in the surface of a paint film.
Chemical Resistance	A coating's resistance to solvents, acids, and alkali testing done under watch glass for 24 hours.
Chlorinated Hydrocarbon	A class of strong, fast evaporating, nonflammable solvents such as carbon tetrachloride, methylene chloride, or trichloroethylene.
Chlorinated Rubber	A coating resin formed by the reaction of rubber with chlorine gas. Often used for chemical or water-resistant properties.
Cleaners	A detergent, alkali, acid, or similar contamination removing material, which is usually water borne.
Coalescence	The formation of resinous or polymeric material when water evaporates from an emulsion or a latex.
Coal Tar	A dark brown to black bituminous material produced by the destructive distillation of coal.
Coal Tar Epoxy	A coating in which the binder or vehicle is a combination of coal tar and epoxy resins.
Coat	The coating applied to a surface in a single application to form a film when dry.
Coating System	A number of coats separately applied, in a predetermined order, at suitable intervals to allow for drying and curing, resulting in a completed job.
Cobwebbing	Premature drying of a coating during spraying causing a spider web effect.
Cohesion	The forces which bind the particles of a paint film together into a continuous film.
Cold Rolled Steel	Low carbon, cold-reduced steel sheet. Differs from hot rolled steel by the absence of mill scale.
Color Fast	Nonfading.
Color Retention	The ability to retain its original color during weathering or chemical exposure.
Combustible Liquid	Any liquid having a flash point at or above 100° F (37.8° C).
Compatibility	The ability to mix with or adhere properly to other coatings without detriment.
Conical Mandrel	An instrument used to evaluate a coating's resistance to cracking when bent over a specified radius.
Copolymer	Large molecules obtained by simultaneous polymerization of different monomers, as in vinyl copolymers.
Corrosion	The decay, oxidation, or deterioration of a substance due to interaction with the environment.
Cracking	Splitting of a coating film, usually as a result of aging.
Craters	The formation of small bowl shape depressions in coating films.
Crosslinking	The setting up of chemical links between molecular chains to form a three dimensional network of connected molecules.
Cross Spraying	Spraying the first pass in one direction and the second at a right angle to the first, providing more even film distribution.
Curing Agent	A hardener or activator added to a synthetic resin to develop the proper film forming properties.
Curtains	Long horizontal runs in a coating film that occur on vertical surfaces when a coating is applied too heavily.

Bulletin #314

Degreaser	A chemical solution or compound designed to remove grease, oil, and similar contaminants.
Deionized Water	Water which has been purified to remove mineral salts.
Delamination	The separation between layers of coats due to very poor adhesion.
Density	Mass per unit volume, usually expressed as grams per milliliter or pounds per gallon.
Descaling	The removal of mill scale or rust from steel by mechanical means, sometimes assisted by flame cleaning.
Dew Point	The temperature of a surface, at a given ambient temperature and relative humidity, at which condensation of moisture will occur.
DFT	Dry film thickness.
Diluent	A portion of the volatile components of a coating which is not a true solvent and has minimal effect on the viscosity.
Dispersion	The suspension of tiny particles, usually pigments. In a liquid, usually resin.
Distilled Water	Water which has been purified by vaporizing the liquid and collecting the vapor which is then condensed back to a liquid having, in the process, removed all salts, metals, etc.
Drier	A chemical which promotes oxidation and subsequent drying of a coating film. Primarily used in oil based coatings.
Dry Spray	Overspray or bounce back, producing a sandy finish due to the sprayed particles having partially dried before reaching the surface.
Drying Oil	An oil having the property of hardening by oxidation to a tough film when exposed to air in the form of a thin film.
Dry Fall	A coating which is designed to dry rapidly so that the overspray can be easily removed from the surfaces below.
Dry Time	Time allotted for an applied coating film to reach a set stage of cure or hardness.
Dry to Tack Free	A stage at which a coating film will form a skin to which dust will not adhere.
Dry to Touch	The state of dry at which a coating film will not transfer onto an item lightly touched against it.
Dry to Handle	The degree of cure at which a film will resist deformation due to handling.
Dry to Recoat	The time required for a cured film to dry prior to the application of a second coat.
Dulling	A loss of gloss or sheen.
Effervescence	An effect in the film caused by rapid solvent release. This "boiling" of solvent causes a pinholed or cratered appearance reducing gloss.
Efflorescence	Water soluble salts, deposited as moisture evaporates, on the exterior of brick or concrete.
Elastic	The ability of a substance to return to its original shape or volume after a distorting force on the substance has been removed.
Emulsion	A two-phase liquid system in which small droplets of one liquid are immiscible in and are dispersed uniformly throughout a second continuous liquid phase.
Enamel	A term used to characterize a coating which has a glossy smooth finish. A common term for alkyd coatings.
Epoxy	A synthetic resin, derived from petroleum products that can be cured by a catalyst or used to upgrade other synthetic resins to form a harder, more chemically resistant film.
Ester	Compounds formed by the reaction of alcohols and organic acids.

Bulletin #314

Etching	The treatment of a surface with an acid in order to dissolve loose particles or provide a profile.
External Atomization	Using air to break up a coating material after it has exited the spray gun nozzle.
Fading	Loss of gloss or sheen.
Fan Pattern	The geometry of a spray pattern.
Feather Edge	Reduced film thickness at the edge of a dry coating film in order to produce a smooth, continuous appearance.
Filler	A compound used to extend or bulk a coating to provide extra body or hiding power.
Film	A layer of coating.
Film Build	The dry film thickness characteristics of a coat.
Film Integrity	The continuity of a coating free of defects.
Film Thickness Gauge	A device for measuring either wet or dry film thickness.
Fineness of Grind	The degree of dispersion of particles within a liquid.
Fingering	A broken spray pattern delivering a heavier coating to one area than another.
Fish Eyes	Circular voids or separations in the coating usually caused by silicone or oily spots.
Flammable	Any substance easily ignited in the presence of a flame; any liquid having a flash point below 100° F (37.8° C).
Flash Point	The lowest temperature of a liquid at which sufficient vapor is provided to form an ignitable mixture when mixed with air.
Flash-off Time	Time which must be allowed after the application of a coating before baking in order that the initial solvents are released, which prevents bubbling.
Flexibility	The degree at which a coating is able to conform to movement or deformation of its supporting surface without cracking or flaking.
Floating (Flooding)	A concentration of one of the ingredients of the pigmented portion of a coating at its surface giving rise to a color change.
Flow	The degree to which a wet coating film can level out after application so as to eliminate roller marks and produce a smooth uniform finish.
Fluid Tip	The orifice in a spray gun to which the needle is seated.
Fluorescent	A class of pigments which, when exposed to visible light, emits light of a different wavelength producing a bright appearance.
Force Drying	The acceleration of drying by increasing the ambient temperature.
Foreign Thinner	Any thinner not recommended on the label or in published literature of the manufacturer, which can affect the coatings performance.
Gelled	A coating which has thickened to a jelly like consistency, making it unusable.
Generic	Belonging to a particular family.
Gloss	The sheen or ability to reflect light.
Gloss Retention	The ability to retain the original sheen during weathering.
Glycol Ether	A group of relatively slow evaporating, strong solvents commonly utilized in epoxy coatings.
Grit	An abrasive blasting media obtained from slag and various other materials.

Bulletin #314

Grit Blasting	Abrasive blasting using grit as the blasting media.
Hardener	An activator curing agent, catalyst, or cross linking agent.
Hard Dry	Full cure of a coating usually 72 hours to 5 days.
Hiding	The ability of a coating to obscure the surface to which it is applied.
High Build	A term referring to a coating which can produce a thick film in a single coat.
Holiday	Any discontinuity, bare, or thin spot in a painted area.
Hydrocarbon	Extracts from petroleum such as gasoline, lubricating oils, solvents, etc.
Hydrophilic	A substance which absorbs or has an affinity for water, water loving.
Hydrophobic	A substance which does not absorb or exhibit an affinity for water.
Immersion	Referring to an environment which is continuously submerged in a liquid, often water.
Impact Resistance	The ability to resist deformation or cracking due to a forceful blow.
Incompatibility	Unsuitable for use together because of undesirable chemical or physical effects.
Induction Time	The period of time between mixing of two component products and the moment they can be used.
Inert Pigment	A non-reactive pigment, filler, or extender.
Inhibitive Pigment	A pigment which assists in the prevention of the corrosion process.
Inorganic	The designation of compounds that do not contain carbon.
Inorganic Zinc	A coating based on a silicate resin and pigmented with metallic zinc which has excellent resistance to organic solvents and general weathering.
Intercoat Contamination	The presence of foreign matter such as dust or dirt between successive coats of paint.
Intercoat Adhesion	The adhesion between successive coats of paint.
Internal Mix	A spray gun in which the fluid and air are combined before leaving the gun.
Intumescent Coating	A fire retardant coating which, when heated, produces non-flammable gasses which are trapped by the film, converting it to a foam, thereby insulating the substrate.
Ion	An atom or group of atoms possessing a positive or negative electric charge as a result of having lost or gained an electron.
Iron Oxide	An oxide of iron. The natural occurring state of steel.
Isopropyl Alcohol (IPA)	A volatile, flammable liquid used as a solvent commonly known as rubbing alcohol.
Jiffy Mixer	Special cylindrical mixing tool required for mixing coatings preventing air entrapment.
Ketone	An organic compound with a carbonyl group attached to two carbon atoms. Usually indicates a strong, fast evaporating solvent.
Krebs Units	An arbitrary unit of viscosity for a Stormer viscosity instrument.
Lacquer	A coating comprised of a synthetic film forming material which is dissolved in organic solvents and dries by solvent evaporation.
Lacquer Thinner	Commonly used term used to describe a solvent blend of ethyl alcohol, ethyl acetate, and toluene.
Laitance	An accumulation of fine particles, loosely bonded, on the surface of fresh concrete, caused by the upward movement of water.

Bulletin #314

Lambs Wool Applicator	Pure sheep skin pads. Synthetic pads deteriorate with solvent-based products.
Latex	A stable dispersion of a polymer substance in an aqueous medium; a common term for water reducible coatings.
Lead Free	Contains, by weight, less than 0.5% lead for industrial products and less than 0.6% lead in consumer products.
Lifting	Softening and raising or wrinkling of a previous coat by the application of an additional coat; often caused by coatings containing strong solvents.
Mastic	A term used to describe a heavy-bodied coating.
Methyl Ethyl Ketone (MEK)	A low boiling, highly volatile flammable solvent with extremely good solubility for most vinyls, urethanes, and other coatings.
Methyl Isobutyl Ketone (MIBK)	A medium boiling solvent commonly used in vinyls.
Metalizing	A method of applying atomized molten metal such as zinc and aluminum to a surface.
Micron	A micrometer or one millionth of a meter.
Mil	One one-thousandth of an inch; 0.001 inches. Commonly used to denote coating thickness.
Mill Scale	A layer of iron oxide formed on the surface of steel plates during hot rolling; bluish in appearance.
Mineral Spirits	A refined petroleum distillate having a low aromatic hydrocarbon content and low solubility; suitable for thinning of alkyd coatings.
Miscible	Capable of mixing or blending uniformly.
Mist Coat	A thin tack coat usually applied to fill porous surfaces such as zinc rich primers.
Moisture Cure Urethane	Oil free urethane that dries through the reaction of temperature and humidity and isocyanate.
Monomer	A substance of low molecular weight molecules capable of reacting to form longer molecules called polymers.
Mottled	Spots of different tones and colors next to each other resulting in a blotchy effect on the coating film.
Muriatic Acid	Concentrated hydrochloric acid often diluted and used for etching concrete.
Nace	National Association of Corrosion Engineers
Neutral	A liquid which is neither acid nor alkali such as water; pH7
Non-Drying Oil	An oil which undergoes little or no oxidation when exposed to air and therefore has no film forming properties.
Nonferrous	A term used to designate metals or alloys that do not contain iron. Example: brass, aluminum, magnesium.
Nonflammable	A compound which does not burn in the presence of a flame.
Nonvolatile	The portion of the coating left after the solvent evaporates: solids.
Oil Length	The ratio of oil to resin expressed as a percentage of oil by weight in the resin. Used to determine the physical properties of a resin.
Opacity	The ability of a coating film to obliterate or hide the color of the surface to which it is applied.
Orange Peel	The dimpled appearance of a dried coating film resembling the peel of an orange.
Organic	Designation of any chemical compound containing carbon.
Organic Zinc	A zinc rich coating utilizing an organic resin such as an epoxy.

Osmosis	The diffusion of liquid through a paint film or other such membrane.
Overspray	Sprayed coating that is dry when it hits the surface, resulting in dusty, granular adhering particles, reducing gloss and presenting a poor appearance.
Oxidation	The formation of an oxide; the curing mechanisms for alkyds.
pH	A measure of acidity and alkalinity; pH 1-7 is acid and pH 7-14 is alkali.
Pass	The motion of a spray gun in one direction only.
Passivate	To make a surface such as steel inert or unreactive, usually by chemical means.
Paste	The product of the dispersion process. It is usually very high viscosity and requires dilution prior to application; a concentrated pigment dispersion used for shading.
Pattern	The shape or stream of material coming from a spray gun.
Peeling	A paint or coating lifting from the surface due to poor adhesion.
Permeability	The degree to which a membrane or coating film will allow the passage or penetration of a liquid or gas.
Phenolic	A synthetic resin used for heat or water resistance.
Phosphatizing	A pretreatment of steel by a chemical solution containing metal phosphates and phosphoric acid to temporarily inhibit corrosion.
Pigment	A finely ground natural or synthetic, insoluble particle adding color and opacity or corrosion inhibition to a coating film.
Pigment Volume Concentration (PVC)	The percent by volume occupied by pigment in the dried film of paint generally expressed as a percentage.
Pigment Grind	The act of dispersing a pigment in a liquid vehicle.
Pinholing	A film defect characterized by small, pore-like flaws in a coating which extend entirely through the film.
Plasticizer	An agent added to the resin to aid in flexibility.
Polyester Resin	A group of synthetic resins which contain repeating ester groups. A special type of modified alkyd resin.
Polymer	A substance of molecules which consist of one or more structural units repeated any number of times.
Polymerization	A chemical reaction in which two or more small molecules combine to form large molecules containing repeated structural units.
Polyurethane	An exceptionally hard, wear resistant coating made by the reaction of polyols with a multi-functional isocyanate.
Polyvinyl Chloride (PVC)	A hard tough plastic solid used for plastics and coatings, commonly known as vinyl.
Porcupine Roller	Spine quill appearing roller that releases bubbles trapped in the more viscous coatings.
Porosity	The presence of numerous minute voids in a cured material.
Portland Cement	Mixture of clay, limestone, shale, and gypsum. When combined with water and aggregate, the result is concrete.
Potable Water	Water fit for human consumption; as in drinking water.
Pot Life	The length of time a coating material is useful after its original package is opened or a catalyst or other curing agent is added.
Practical Coverage	The spreading rate of a paint calculated at the recommended dry film thickness and assuming 15% material loss.

Bulletin #314

Primer	The first coat applied to a surface, formulated to have good bonding, wetting & inhibiting properties.
Profile	The term used to describe the anchor pattern of a surface produced by sandblasting, acid etching, or similar method.
Pyrometer	An instrument used to measure the temperature of a surface.
Quv	An accelerated testing device designed to evaluate the fading properties of a coating by exposure to highintensity, ultraviolet light.
Reducer	Commonly known as thinner.
Reflectance	The ratio of the intensity of reflected light to that of incidental light.
Relative Humidity	The ratio, expressed as a percent, of the quantity of water vapor actually present in the air to the greatest amount possible at a given temperature.
Resin	A group of organic materials either natural or synthetic, which can be molder or dissolved.
Rheology	The science characterizing fluid deformation or flow.
Roller	A cylinder covered with lamb's wool, felt, foamed plastics, or other materials used for applying coatings.
Runs	Sagging and curtaining of a coating or paint film, usually caused by improper thinning, excessive film build, or poor application techniques.
Rust	The reaction product of steel, oxygen, and water.
Salt Atmosphere	A moist, heavily laden air with a high chloride concentration; used as a test for accelerated corrosion evaluations and also present near seacoast areas.
Saponification	The alkaline hydrolysis of fats whereby a soap is formed; typical reaction between alkyds and galvanized metals resulting in peeling.
Satin Finish	A descriptive term generally referenced to paints with a 60° gloss reading between 10 and 40.
Sealer	A coating used on absorbent surfaces prior to a finish coat.
Serrated Squeegee	A notched squeegee used for applying viscous coatings.
Settling	The sinking of pigments, extenders or other solid matter in a paint, or standing in a container, with a consequent accumulation on the bottom of the can.
Shade	A term employed to describe a particular hue or tone.
Shelf Life	The maximum time interval in which a material may be kept in a usable condition during storage.
Shot Blasting	Abrasive blasting with round iron shot, or any material which retains its spherical shape, for peering purposes.
Silica Sand	Clean sand made up of sharp silica particles, not containing dirt or clay, used for abrasive blast cleaning.
Silicone Resins	Resins based on silicone instead of carbon, generally used for their outstanding heat resistance and water repellency.
Skinning	The formation of a solid membrane on the top of a liquid, caused by partial curing or drying of the repellency.
Solids by Volume	The percentage of the total volume occupied by nonvolatile compounds.
Solids by Weight	The percentage of the total weight occupied by nonvolatile compounds.
Solvent	A liquid in which another substance may be dissolved.

Bulletin #314

Solvent Entrapment	The encapsulation of solvent within a cured coating due to improper drying conditions; results in a non-continuous film.
Sound Rusted Substrate	A rusted substrate cleaned of all loose rust and other loose materials, but not cleaned to bare metal.
Spalling	Erosion of the concrete surface, exposing coarse aggregate.
Spray Head	The combination of needle, tip, and air cap.
Spray Pattern	The configuration of coating sprayed on the surface.
Specification	A set of instructions detailing the plan for coating of a project; a list of criteria for a coating.
Spread Rate	Coverage, usually at the specified dry film thickness.
Stress Corrosion Cracking	Spontaneous cracking produced by the combined action of corrosion and static stress.
Strong Solvent	Any solvent capable of dissolving large quantities of a specified subject.
Substrate	The surface to be coated.
Surfacer	Pigmented composition for filling depressions in order to obtain a smooth, uniform surface before applying the finish coat.
Surfactant	An additive which reduces surface tension thereby improving wetting or helping to disperse pigments or inhibit foam.
Suspension	A relatively coarse, noncolloidal dispersion of solid particles in a liquid.
Synthetic	Manufactured, as opposed to naturally occurring.
Tabor Abrader	An instrument used to measure abrasion resistance.
Tack Free	Completion of the initial cure process of a coating. Airborne dust and soil will no longer be trapped in the coating.
Tails	Finger-like spray pattern produced by improper gun or coating material adjustment.
Tape Time	The drying time of a coating required prior to masking sections for lettering or striping after which tape will not distort the finish.
Thermocouple	A temperature measuring device.
Thermoplastic	Resins having the property of becoming soft upon the application of heat but which regain hardness after cooling.
Thermosetting	Resins having the property of becoming insoluble or hard upon the application of heat.
Thinners	A liquid (solvent) added to a coating to adjust viscosity.
Thixotropic	An adjective which describes full bodied material which undergoes a reduction in viscosity when shaken, stirred, or otherwise mechanically disturbed but which readily recovers its original full bodied condition upon standing.
Toluene	An aromatic solvent with a high boiling range and low flash point classified as a strong solvent.
Tooth	The profile, mechanical anchor pattern or surface roughness.
Two-Pack	A coating which is supplied in two parts and must be mixed in the correct portions before use in order to cure.
Undercoat	The coat applied to the surface after preparation and before the application of a finish coat.
Underfilm Corrosion	Corrosion that occurs under films in the form of randomly distributed hairlines.

Bulletin #314

Vapor Barrier	A moisture impervious layer which prevents the passage of water into a material or structure.
Vapor Transmission Rate	The rate at which moisture passes through a material or coating.
Vehicle	The liquid portion of a paint in which the pigment is dispersed. Comprised of binder and thinner.
Vinyl Copolymer	A resin produced by copolymerizing vinyl acetate and vinyl chloride.
Viscometer	One of several types of instrument for measuring a liquids' viscosity.
Viscosity	A measure of fluidity of a liquid.
Viscosity Cup	An efflux viscometer utilizing a measured volume of liquid flowing through a precise orifice.
Voids	Holidays or holes in a coating.
Volatile Organic Compounds (VOC)	A measure of the total amount of organic compounds evaporating from a coating film, excluding water.
Volume Solids	The volume of the nonvolatile portion of a composition divided by the total volume expressed as a percent used to calculate coverage rate.
Wash Primer	A thin paint, usually a chromate, designed to promote adhesion or to be used as a barrier coat.
Water Blasting	Blast cleaning of metal using high velocity water.
Water Spotting	A surface defect caused by water droplets depositing a circular ring of contaminants.
Weatherometer	A machine designed for the accelerated testing of coatings.
Wet on Wet	The technique of painting whereby the second coat is applied before the first coat has dried and the composite film dries as a whole.
Wetting	The ability of a vehicle to flow onto the surface in order to achieve a good bond.
Wet Sandblasting	The incorporation of water into the sandblasting operation in order to minimize dust.
Wicking Action	A capillary drawing action bringing oil to the surface.
Xylene	A flammable aromatic hydrocarbon solvent used in epoxies and fast drying alkyds.

General: Every reasonable effort is made to insure the technical information and recommendations on these data sheets are true and accurate to the best of our knowledge at the date of issuance and are subject to change without notice. Products and information are intended for use by qualified applicators that have the required background, technical knowledge, and equipment to perform valid tasks in a satisfactory manner.

Warranty: ITW Resin Technologies, a division of Illinois Tool Works Inc., warrants that its products meet their printed specifications. This is the sole warranty. This warranty expires one year after the shipment.

Warranty Claims: If any product fails to meet the above, ITW Resin Technologies will, at its option, either replace the product or refund the purchase price. ITW Resin Technologies will have no other liability for breach of warranty, negligence or otherwise. All warranty claims must be made in writing within one year of date of shipment. No other claims will be considered.

Disclaimer: ITW Resin Technologies makes no other warranty, express or implied, and specifically disclaims any warranty of merchantability or fitness for a particular purpose. Suggestions concerning use of products are not warranties. The purchaser assumes

the responsibility for determining suitability of products and appropriate use. ITW Resin Technologies' sole liability, for breach of warranty, negligence or otherwise, shall be replacement of product or refund of the purchase price, at ITW Resin Technologies' election. Under no circumstances shall ITW Resin Technologies be liable for any indirect, incidental or consequential damages, even if advised of the possibility of such damages.

Modification of Warranty: No distributor or sales representative has the authority to change the above provisions. No change in the above provisions will be valid unless in writing and signed by an officer or the Technical Director of ITW Resin Technologies. No form of any purchase order shall serve to modify any provision of this document.

Mediation and Arbitration: If any dispute arises relating to products or product warranties, either the purchaser or ITW Resin Technologies may: a) initiate mediation under the then current Center for Public Resources (CPR) Model Procedure for Mediation of Business Disputes, or b) initiate non-binding arbitration under the rules of the American Arbitration Association for the resolution of commercial disputes.

TEST PROCEDURE GUIDELINES

TEST METHODS:	APPLIED ADHESIVE COATING WEIGHT
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PURPOSE OF PROCEDURE:

To determine the amount of adhesive coating applied to substrate.

DEFINITION OF TERMS:

Adhesive Coating Weight: This term refers to the amount of adhesive that has been applied to the substrate. Results are stated in pounds per ream or grams per square meter, with a ream being 3000 square feet or 278.7 square meters.

EQUIPMENT/MATERIALS NEEDED:

1. Analytical balance
2. Metal Template 4 in. x 4 in (10.2 cm x 10.2 cm).
3. Cutting tool (razor blade)
4. Heptane (other suitable solvents such as toluene or MEK may be acceptable or preferred.)
5. Tissue
6. Hot air blower (optional)

TEST PROCEDURE:

1. Cut sample using template
2. Weigh sample and record weight
3. With adhesive coating side up, remove coating using tissue and Heptane
4. Air dry for five minutes, or dry with hot air blower
5. Reweigh sample
6. Subtract second weight from first weight to obtain adhesive coating weight in grams.
7. Multiply by 59.4714 to obtain weight in lbs. per ream. (Ream = 3000 sq. feet) or multiply weight in grams by 97 to obtain weight in grams/square meter.

DOCUMENTATION:

The allowable tolerance that is agreed upon by the customer should be in written specifications

provided by the customer.

APPLIED ADHESIVE COATING WEIGHT (cont'd)

The frequency of the test to be performed must also be agreed upon by the customer. That is to say that the customer should provide in his specification how often the test is to be done and by what form of sampling method, random or non-random. These will be used to record results.

Many customers will require representative samples to be kept in inventory to reference in the event that the customer finds a defect in the provided order. This frequency of these retains should also be specified to ensure compliance.

REFERENCES: